OPTICS COMMUNICATIONS

Volume 150, numbers 1–6, 1 May 1998

Abstracted/Indexed in: Chemical Abstracts/Current Contents: Engineering, Computing and Technology/Current Contents: Physical, Chemical & Earth Sciences/EI Compendex Plus/Engineering Index/INSPEC

Contents

Instructions to authors

Propagation, diffraction and scattering

K. Schmidt, T. Rother and J. Wauer, The equivalence of applying the Extended Boundary Condition and the continuity conditions for solving electromagnetic scattering problems 1

A.V. Kabashin and P.I. Nikitin, Surface plasmon resonance interferometer for bio- and chemical-sensors 5

N.B. Piller and O.J.F. Martin, Extension of the generalized multipole technique to anisotropic medias 9

Optical information, image formation and analysis, optical computing

B.R. Frieden, An exact, linear solution to the problem of imaging through turbulence 15

S. Hunsche, M. Koch, I. Brener and M.C. Nuss, THz near-field imaging 22

W. Schade, D.L. Osborn, J. Preusser and S.R. Leone, Two-color cross-correlation of fs-laser pulses by two-photon induced photoconductivity for near and far field optical measurements 27

G.S. Pati, G. Unnikrishnan and K. Singh, Multichannel image addition and subtraction using joint-transform correlator architecture 33

D.A. Dement'ev, A.L. Ivanov, O.B. Serov, A.G. Stepanov, Yu.A. Matveets, S.V. Chekalin and A.M. Smolovich, Geometric-optical reconstruction of a wavefront experimental realization with femtosecond laser pulses 38

A. Ezbiri, S.E. Kanellopoulos and V.A. Handerek, High resolution instrumentation system for fibre-Bragg grating aerospace sensors 43

S.I. Bozhevolnyi, B. Vohnsen and K. Pedersen, Near-field optical microscopy of nonlinear susceptibilities 49

E. Takahashi, I. Matsushima, Y. Matsumoto, I. Okuda and Y. Owadano, Two-dimensional measurement of laser-induced target movement by face-on interferometry 56

A.R.D. Somervell and T.H. Barnes, Unambiguous measurement of surface profile using a Sagnac interferometer with phase feedback 61

M.R. Sajan, C.J. Tay, H.M. Shang and A. Asundi, Improved spatial phase detection for profilometry using a TDI imager 66

P.B. Chapple and D.C. Bertilone, Stochastic simulation of infrared non-Gaussian natural terrain imagery 71

Optical communications

M.J. Guy, J.R. Taylor and R. Kashyap, Demonstration of the possibility of > 100 Gbit/s transmission over 77 km of standard fibre using a super-step-chirped fibre grating dispersion compensator. 77

S.K. Mondal and S.N. Sarkar, Interesting effect of optical Kerr nonlinearity in expanding single-mode regime of optical fibers using dispersion-flattened profiles 81

J.-J. Yu, K. Guan, Z. Xu and B. Yang, The effects of different dispersion compensation ratios on nonlinear single channel and WDM systems 85

A. Kumar and A. Kumar, A comparative numerical study of soliton switching in a nonlinear directional coupler with saturating nonlinearity 91

D.H. Naghski, J.T. Boyd, H.E. Jackson and A.J. Steckl, Potential for size reduction of AlGaAs optical channel waveguide structures fabricated by focused ion beam implantation and oxidation 97

(Continued inside)

0030-4018(19980501)150:1-6;1-F

OPTICS COMMUNICATIONS

Volume 150, numbers 1–6, 1 May 1998

Abstracted/Indexed in: Chemical Abstracts/Current Contents: Engineering, Computing and Technology/Current Contents: Physical, Chemical & Earth Sciences/EI Compendex Plus/Engineering Index/INSPEC

Contents

Instructions to authors

Propagation, diffraction and scattering

K. Schmidt, T. Rother and J. Wauer, The equivalence of applying the Extended Boundary Condition and the continuity conditions for solving electromagnetic scattering problems 1

A.V. Kabashin and P.I. Nikitin, Surface plasmon resonance interferometer for bio- and chemical-sensors 5

N.B. Piller and O.J.F. Martin, Extension of the generalized multipole technique to anisotropic medias 9

Optical information, image formation and analysis, optical computing

B.R. Frieden, An exact, linear solution to the problem of imaging through turbulence 15

S. Hunsche, M. Koch, I. Brener and M.C. Nuss, THz near-field imaging 22

W. Schade, D.L. Osborn, J. Preusser and S.R. Leone, Two-color cross-correlation of fs-laser pulses by two-photon induced photoconductivity for near and far field optical measurements 27

G.S. Pati, G. Unnikrishnan and K. Singh, Multichannel image addition and subtraction using joint-transform correlator architecture 33

D.A. Dement'ev, A.L. Ivanov, O.B. Serov, A.G. Stepanov, Yu.A. Matveets, S.V. Chekalin and A.M. Smolovich, Geometric-optical reconstruction of a wavefront experimental realization with femtosecond laser pulses 38

A. Ezbiri, S.E. Kanellopoulos and V.A. Handerek, High resolution instrumentation system for fibre-Bragg grating aerospace sensors 43

S.I. Bozhevolnyi, B. Vohnsen and K. Pedersen, Near-field optical microscopy of nonlinear susceptibilities 49

E. Takahashi, I. Matsushima, Y. Matsumoto, I. Okuda and Y. Owadano, Two-dimensional measurement of laser-induced target movement by face-on interferometry 56

A.R.D. Somervell and T.H. Barnes, Unambiguous measurement of surface profile using a Sagnac interferometer with phase feedback 61

M.R. Sajan, C.J. Tay, H.M. Shang and A. Asundi, Improved spatial phase detection for profilometry using a TDI imager 66

P.B. Chapple and D.C. Bertilone, Stochastic simulation of infrared non-Gaussian natural terrain imagery 71

Optical communications

M.J. Guy, J.R. Taylor and R. Kashyap, Demonstration of the possibility of > 100 Gbit/s transmission over 77 km of standard fibre using a super-step-chirped fibre grating dispersion compensator. 77

S.K. Mondal and S.N. Sarkar, Interesting effect of optical Kerr nonlinearity in expanding single-mode regime of optical fibers using dispersion-flattened profiles 81

J.-J. Yu, K. Guan, Z. Xu and B. Yang, The effects of different dispersion compensation ratios on nonlinear single channel and WDM systems 85

A. Kumar and A. Kumar, A comparative numerical study of soliton switching in a nonlinear directional coupler with saturating nonlinearity 91

D.H. Naghski, J.T. Boyd, H.E. Jackson and A.J. Steckl, Potential for size reduction of AlGaAs optical channel waveguide structures fabricated by focused ion beam implantation and oxidation 97

(Continued inside)

0030-4018(19980501)150:1-6;1-F

OPTICS COMMUNICATIONS

Volume 150, numbers 1–6, 1 May 1998

(Continued from page 4 of cover)

I.D. Phillips, A. Gloag, D.G. Moodie, N.J. Doran, I. Bennion and A.D. Ellis, Simultaneous demultiplexing and clock recovery using a single electroabsorption modulator in a novel bi-directional configuration 101

Atomic, molecular and plasma physics

K. Kiersnowski, L. Józefowski and T. Dohnalik, Evanescent light–atom interaction detected by optogalvanic effect 106

Condensed matter

M. Mazzoni, Emission spectra following radiation trapping switching off: coherent effects detected up to resonance and signal enhancement 111

A.A. Bugayev and P.P. Boriskov, Time-resolved two-beam coupling in silicon 115

D. Tonova, A. Paneva and B. Pantchev, Determination of refractive index profiles of gradient optical waveguides by ellipsometry 121

Quantum optics

R. Bonifacio, Classical and quantum self amplified spontaneous emission in a high gain free electron laser 126

M. Löffler and H. Walther, Atomic coherence effects in the ion-trap laser 131

Lasers

G.L. Bourdet and G. Lescroart, Theoretical modelling of mode formation in Tm^{3+}:YVO_4 microchip lasers 136

G.L. Bourdet, G. Lescroart and R. Muller, Spectral characteristics of 2 μm microchip Tm:YVO_4 and Tm,Ho:YLF lasers 141

M. Müller, V.P. Kalosha and J. Herrmann, 2π-pulse laser using an intracavity quantum-well absorber 147

H. Liu and J. Sun, Maser action without inversion in interstellar space 153

T.-C. Yen, J.-W. Chang, J.-M. Lin and R.-J. Chen, High-frequency optical signal generation in a semiconductor laser by incoherent optical feedback 158

R.M. Hofstra, M.J. Zwegers, F.A. van Goor and W.J. Witteman, Variable reflectivity unstable resonators for a long pulse XeCl excimer laser 163

Nonlinear optics

J.E. Bernard, L. Marmet and A.A. Madej, A laser frequency lock referenced to a single trapped ion 170

A.V. Khomenko, E. Nippolainen, A.A. Kamshilin, A. Zúñiga Segundo and T. Jaaskelainen, Leaky photorefractive surface waves in $Bi_{12}TiO_{20}$ and $Bi_{12}SiO_{20}$ crystals 175

J.N. Sweetser, J.L. Durant and R. Trebino, Ultrafast spectroscopy of high-lying excited states via eight-wave mixing 180

Q. Lin and E. Wintner, Three-dimensional evolution of ultrashort pulses in dispersive media beyond the slowly varying envelope approximation 185

J.T. Manassah and B. Gross, Superradiance in a dense open Λ-system 189

R. Macdonald, P. Meindl, G. Chilaya and D. Sikharulidze, Photo-excitation of space charge fields and reorientation of a nematic liquid crystal of discotic molecules 195

(Continued on preceding page)

OPTICS COMMUNICATIONS

Volume 150, numbers 1–6, 1 May 1998

(Continued from following page)

T. Zhang, J. Li, P. Gao, Q. Gong, K. Tang, X. Jin, S. Zheng and L. Li, Enhanced optical limiting performance of a novel molybdenum complex of fullerene 201

K. Meerholz, R. Bittner and Y. De Nardin, Field asymmetry of the dynamic gain coefficient in organic photorefractive devices 205

K.L. Vodopyanov, Megawatt peak power 8–13 μm CdSe optical parametric generator pumped at 2.8 μm 210

L. Zhang, W. Zhang, X. Chen, J. Xu, G. Zhang, Z. Shao, H. Chen and J. Han, Suppression of dynamic instability and comparison of the response time in mutually pumped phase conjugators 213

C.-F. Li and G.-C. Guo, The one-dimensional soliton state of Bose-Einstein condensate 219

N. Hild, S. Khodja, C. Andraud, I. Ledoux, J. Zyss and A. Collet, Crystal growth and characterisation of new organic nonlinear optical materials: 6-cyano and 6-nitro-2,2-dimethyl-3,4-epoxychroman 223

J.D. Shakos, A.M. Cox, D.P. West, K.S. West, F.A. Wade, T.A. King and R.D. Blackburn, Processes limiting the rate of response in photorefractive composites 230

X.G. Huang and M.R. Wang, A novel quasi-phase-matching frequency doubling technique 235

FULL LENGTH ARTICLES

Propagation, diffraction and scattering

D. Cabaret, S. Rossano and C. Brouder, Mie scattering of a partially coherent beam 239

J.J. Stamnes and D. Jiang, Focusing of electromagnetic waves into a uniaxial crystal 251

V.S. Nikolayev, P. Sibille and D.A. Beysens, Coherent light transmission by a dew pattern 263

Optical information, image formation and analysis, optical computing

H. Hamam, A two-way optical interconnection network using a single mode fiber array 270

R.L. Gordon and G.W. Forbes, Optimal resolution with extreme depth of focus 277

G. Boudebs, M. Chis and A. Monteil, Contrast increasing by third-order nonlinear image processing: a numerical study for microscopic rectangular objects 287

G. Cipparrone, A. Mazzulla, F.P. Nicoletta, L. Lucchetti and F. Simoni, Holographic grating formation in dye doped polymer dispersed liquid crystals 297

Optical communications

M.J. Ablowitz, G. Biondini, S. Chakravarty and R.L. Horne, On timing Jitter in wavelength-division multiplexed soliton systems 305

Quantum optics

M. Höijer and G. Björk, Modification of spontaneous emission rate in planar dielectric microcavities – seen as superradiance and subradiance 319

D. Dragoman and M. Dragoman, Optical modelling of quantum dots 331

E. Landahl, D. Baiocchi and J.R. Thompson, A simple analytic model for noise shaping by an optical fiber Raman generator 339

(Continued on preceding page)

OPTICS COMMUNICATIONS

Volume 150, numbers 1–6, 1 May 1998

(Continued from following page)

H.M. Castro-Beltran, J.J. Sanchez-Mondragon and S.M. Chumakov, Extra revivals in cooperative atomic inversion in a cavity 348

Lasers

B. Chassagne, G. Jonusauskas, J. Oberlé and C. Rullière, Multipulse operation regime in a self-mode-locked Cr^{4+}:forsterite femtosecond laser 355

Nonlinear optics

H. Steudel, C. Figueira de Morisson Faria, M.G.A. Paris, A.M. Kamchatnov and O. Steuernagel, Second harmonic generation: the solution for an amplitude-modulated initial pulse 363

A. Beržanskis, A. Matijošius, A. Piskarskas, V. Smilgevičius and A. Stabinis, Sum-frequency mixing of optical vortices in nonlinear crystals 372

Y. Chen and J. Atai, Stability of fundamental solitons of coupled nonlinear Schrödinger equations 381

A. De Rossi, G. Assanto, S. Trillo and W.E. Torruellas, Excitation of stable transverse wavepackets with quadratic and cubic susceptibilities 390

Author index 399

Subject index 406